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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/746,065	12/26/2000	Daijiro Inoue	001700	1991

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EXAMINER

RODRIGUEZ, ARMANDO

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 02/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/746,065	INOUE ET AL.	
	Examiner	Art Unit	
	Armando Rodriguez	2828	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-26 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7,10,11 and 17-26 is/are allowed.
- 6) ☒ Claim(s) 1-3,5,6,8,9 and 12-16 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Paul IP

**PAUL IP
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed November 27, 2002 have been fully considered but they are not persuasive. Regarding the arguments of claim 1, which pertains to the carrier concentration applicant relies on limitations disclosed within the specifications of the invention and not the recited limitations. Claim 1 recites a relationship between the low carrier concentration layer and the current blocking layer as they relate with regards to their carrier concentration, where the relationship is established and claimed as one layer having a lower concentration than the other and no numerical ranges have been claimed. Therefore, applicant is reminded that it is impermissible to read limitation from the specification into the claim. Okubo et al discloses layer 960 as having a concentration of 1×10^{18} cm and layer 965 as having a concentration of 3×10^{18} cm thereby establishing a relation of one layer having a concentration lower than the other.

Claim Objections

Claim 6 is objected to because of the following informalities: the claim should read, "said low carrier concentration layer" instead of "said lower carrier concentration layer". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6,8,9,12-16 rejected under 35 U.S.C. 103(a) as being unpatentable over Okubo et al (PN 6,181,723) in view of Hiroyama et al (PN 5,963,572).

In figure 22 Okubo et al illustrates a semiconductor laser having an active layer (954), a cladding layer (955) formed on the active layer, an etch stop layer (956) having a thickness of .003 μ m, which is the same as applicant's depletion layer formed on the cladding layer, a current blocking layer (960), which is the same as applicant's low carrier concentration layer formed on the etch stop layer and a current block layer (965) having a higher carrier concentration than current layer (960), as described in column 22 example 10. In the abstract Okubo et al discloses using semiconductor layers selected from the III-V group compound semiconductor elements to obtain a light-emitting device.

Okubo et al does not disclose the thickness of layer (956), which represents applicant's depletion layer, as having a thickness of at least 10 nm.

Hiroyama et al illustrates in figure 1 a semiconductor laser device having semiconductor layers selected from the III-V group compound semiconductor elements, where layer (8) represents layer (956) of Okubo et al having a thickness of .1 μ m as disclosed in column 9 lines 24-45.

Therefore, it would have been obvious to a person having ordinary skills in the art to use a thickness of .003 μ m or .1 μ m in the device of Okubo et al, since Hiroyama et al discloses a similar layer from the III-V group compound in a similar structural

1,132 to Overcome
Rejection

arrangement. Thereby, the layers having similar structural arrangement and composition will provide a similar function within the device.

Allowable Subject Matter

Claims 7,10,11 and 17-26 allowed.

The following is an examiner's statement of reasons for allowance:

After reviewing applicant's amendments, arguments and conducting an updated search examiner finds that none of the cited prior arts alone or in combination discloses the claimed semiconductor laser having the structural combination of independent claims 7 and 17 with the structural interconnection of the active layer, cladding layer, current blocking layer, low carrier concentration layer and depletion layer as recited in claims 7 and 17.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Armando Rodriguez whose telephone number is (703) 308-6218. The examiner can normally be reached on 10-hour day / M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Ip can be reached on (703) 308-3098. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-4881.

Armando Rodriguez
Examiner
Art Unit 2828


Paul Ip
Supervisor
Art Unit 2828

AR/PI
February 4, 2003